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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/328,911 06/09/99 GELON

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EXAMINER

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ART UNIT

PAPER NUMBER

3661

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DATE MAILED:

04/11/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/328,911

Applicant(s)

GELON ET AL.

Examiner

Brian J. Broadhead

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2000.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
2. ☐ received in Application No. (Series Code / Serial Number) _____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 1 through 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 1 and 23 recites the limitation "the final orbit" in the last line of the second limitation. There is insufficient antecedent basis for this limitation in the claim.
4. Claim 1 and 23 recites the limitation "the thrusters" in the last limitation. There is insufficient antecedent basis for this limitation in the claim. Is it the electric or chemical thrusters, or both?

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 through 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Spitzer et al., 5716029.

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7. As per claim 1 and 23, Spitzer et al, discloses launching a spacecraft on lines 56-57, on page 4; a spacecraft with chemical and electrical propulsion on lines 6-11, on page 9; and a solar array on line 37, on page 6; firing the chemical propulsion at the apogees of the intermediate orbits to raise the orbit to a geosynchronous orbit on lines 42-43, on page 3; steering the thrust vector both in plane and out of plane while rotating the spacecraft body and steering the solar array to maintain the solar illumination on line 56, on column 7, through line 34, on column 8; firing the electric thrusters to raise the orbit from where the chemical thruster raised the orbit on lines 53-54, on page 3; and selectively firing the chemical thruster on lines 40-41, on page 3.

8. As per claim 2, Spitzer et al. discloses the thrust vector is maintained substantially normal to the axis of the solar array and the sun is normal to the solar array on lines 6-7, on page 10.

9. As per claims 3, 25, and 26, Spitzer et al. discloses the thrust vector is not normal to the axis of the solar array and the thrust vector is controlled to provide sufficient solar power to perform maneuvers and minimize propellant use on lines 35-38, on page 3.

10. As per claim 4 and 5, Spitzer et al. discloses that the transfer orbit is subsynchronous on line 45, on page, and supersynchronous on line 33, on page 1.

11. As per claim 6 and 24, Spitzer et al. discloses the thruster firing profile is generated on board on lines 40-41, on page 3.

12. As per claims 7, 8, 9, 25, 26, 27, and 29, Spitzer et al. discloses control from the earth on lines 40-42, on page 6; the steering maintains the sun normal to the solar array

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on lines 35-38, on page 10; the thrust vector is not normal to the axis of the solar array and the thrust vector is controlled to provide sufficient solar power to perform maneuvers and minimize propellant use on lines 35-38, on page 3, and lines 57-60, on page 5.

13. As per claims 10, 11, and 28, Spitzer et al. discloses the spacecraft steering profile steers the thrust vector to maintain the sun normal to the solar panels on lines 35-40, on page 10; and firing the electric propulsion to compensate for the disturbances on lines 5-7, on page 6.

14. As per claim 15, Spitzer et al. discloses being able to turn on and off the thrusters on lines 40-41, on page 3.

15. As per claim 16, Spitzer et al. discloses using the electric thruster to compensate for disturbances on lines 42-45, on page 7.

16. As per claim 17, 18, 19, and 20, Spitzer et al. discloses using momentum wheels to maintain vehicle attitude on lines 1-2, on page 6; and the thrust vector points the resultant vector away from the center of mass on lines 51-63, on page 5.

17. As per claims 12, 13, 14, 21, and 22, Spitzer et al. discloses a hybrid propulsion system to use both chemical and electric propulsion to achieve a geosynchronous orbit and to compensate for disturbances on lines 5-45, on page 9.

Response to Arguments

18. Applicant's arguments filed 12-11-00 have been fully considered but they are not persuasive.

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19. There are three limitations listed on page 9 of the remarks that are stated to not be disclosed in Spitzer et al. The first being "firing chemical...than the inclination of the final orbit". The examiner believes that the main contention with this limitation is that applicants take the position that Spitzer et al does not disclose using both chemical and electrical thrusters. The examiner disagrees and directs the applicants to figure 11, where Spitzer et al. has a graph of the different ways that he discloses the implementation of his invention. The second limitation "continuously firing the electric... to maintain illumination on the solar panels" is also disclosed by Spitzer et al.

Applicants are directed to line 56, on column 7, through line 34, on column 8. In this section Spitzer et al. discloses that the "while the direction of thrust primarily points in the direction of the change in velocity lying within the orbital plane 75, it is also directed out of parallel from the orbital plane." It is also disclosed that the craft's attitude is reoriented(steered). As per the third limitation, throughout the entire disclosure firing selected thrusters are disclosed, one instance being firing the thruster at apogee.

20. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., orientation of the spacecraft while it is steered, the solar panels being steered independent of the entire spacecraft, etc.) are not recited in the rejected claim(s).

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
22. Hoosick et al., 6032904, discloses a multiple usage thruster mounting configuration.
23. Basuthakur et al., 5452869, discloses an on-board three axis attitude determination and control system.
24. Frazier, 5681011, discloses a method for injecting payloads into orbits.
25. Crill et al., T100604, discloses a method of placing a spacecraft into final earth orbit or earth escape trajectory.
26. Tilley et al., 5349532, discloses a spacecraft attitude control and momentum unloading using gimbaled and throttled thrusters.
27. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Broadhead whose telephone number is 703-308-9033. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William A. Cuchlinski can be reached on 703-308-3873. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

BJB
April 5, 2001

Jacques H. Louis
JACQUES H. LOUIS
PRINCIPAL EXAMINER